Scott. II-27—100,000—21-5-43.

Development (195 47) Department.

83 SERIES.

G.O. No. 5604

Dated 3-12-47

[Despatch Abstract.]

Agriculture - Grow More Food - Manures - Preservation of cattle urine.

Papers Recorded.

CONSERVATION AND UTILISATION OF CATTLE URINE.

It is a common practice with most ryots to collect and preserve the dung of cattle and allow the urine voided by them to run to waste. In fact, the urine voided by an animal contains more nitrogen than the dung. The Nitrogen in the urine is in a soluble form and can be readily utilised by plants, while dung takes some to to decompose before the Nitrogen in it is converted into a form to become fit for absorption by plants. Unfortunately, however, almost all the urine voided by both the milch and work cattle is allowed to run to waste, by most of the cattle owners, big and small. If the urine along with the dung is carefully collected and preserved together under ideal conditions, a healthy and quick decomposition of dung also takes place. The chief principle in penning sheep in fields and disturbing them 3 or 4 times in the night is more to have the benefit of their urine to the fullest extent as the animals pass some quantity of urine every time they are disturbed.

Cattle urine can be conserved in any one of the three following methods:--

(1) By providing an impervious pavement to the flooring of cattle shed, collecting the urine in a masonry pit, provided near about the shed, leading the urine and as well as the water used in washing the floor to it through a masonry channel. The urine from the pit can be daily removed and uniformly spread over the dung in the manure pit which should be a covered one to protect the valuable manure from sun and rain. The urine can also be directly applied to soil as it is, or in a diluted form with irrigation water. This system of urine conservation is called the urine trap system.

(2) By providing a bedding of all sorts of bulky organic wastes like green and dry leaves, waste straws and sweepings of all kinds, paddy and groundnut husk, sugarcane trash, sweepings from threshing floors, etc., in cattle shed provided with impervious sides, and flooring 3 to 4' deep below ground level and allowing the urine voided by the animals to be absorbed. The dung and uring get intermixed with the bedding as a result of the trampling of the animals, particularly when straw is used, that there would be little or no pure dung to be removed to the manure pit daily. The important point to be observed in this system is that a layer of fresh bedding should be spread over the previous one to give comfort to the animals and add bulk to the manure. This system of cattle manure preservation is called the 'Loose Box System'. When the high of the bedding with the dung and urine in the loose box has reached the ground level the manure may be dug out, carted straight to the fields or to the manure pit according to necessity and the process repeated. It takes 2 to 3 months for a loose box to get filled up for removal, as the manure gets thoroughly compacted under the hoof of the animals.

In places where plenty of organic matter cannot be had, or in seasons when it cannot be had, the floorings of cattle shed of the same type as in No.(2) above can have a bedding of tank silt of sand or both together, upto a layer of about 3-6". The urine is absorbed by sand or silt. The cattle dung should be removed daily to the manure pit. The sand or silt layer may be stirred with a mammaty once in 2 or 3 days to improve the absorptive capacity of the material. The layer of sand or silt when fully soaked with urine, may be scraped up and heaped in a corner of the shed or under cover in any other place, as it is found that by mixing the urine soaked earth or sand with cattle manure in the manure pit, the loss of nitrogen is greater. This system of urine conservation is called the " dry earth system".

It would be necessary to stock sufficient quantities of waste matter or silt and sand near about the cattle sheds in advance for use in the rainy season.

p.t.o.

By adopting the most convenient of the above three methods, it would be possible to conserve all the urine voided by animals, and substantially improve the manure production both in quantity and quality in each ryot's holding, and to become independent to a greater extent than now, of outside supply of other more costly manures.

Preserve what you have and then ask for more, if necessary should be the motto of every individual.

M. ANANDAN,
for DIRECTOR OF AGRICULTURE.

/ true copy /

DEPARTMENT OF AGRICULTURE,
M A D R A S.

CARE AND MANAGEMENT OF CATTLE MANURE IN SOUTH INDIA.

Cattle manure is a term ordinarily applied to the dung and urine of farm animals together with the litter and decomposable rubbish collected in the farm yard. It is also known as far-yard manure.

2. As this manure is composed chiefly of both the digested and the undigested plant-matter which cattle eat, it contains all the essential constituents which are found in plants. Thus this manure when applied would fully satisfy the chief requirements of plants.

3. The quantity of cattle manure available is however limited and the amounts of valuable plant-foods in cattle manure are small. Therefore care has to be taken in its collection, preparation, preservation and application.

4. Though every ryot knows the value of cattle manure few care to prepare it in the best manner possible.

5. Most often the urine is allowed to run to waste. It is of consideratble value as it contains all the waste tissues of the body and supplies the most valuable plant food constitutents in a soluble and readily available form. It contains large quantities of nitrogen and potash. Through its loss/the ryot allows the urine to be decomposed and lost.
/ the ~~tyer~~ ryot loses a most valuable fertilizing material. In several cases, the ryot allows the urine to be decomposed and lost.

The dung is rich in phosphoric acid, a valuable substance for production of grain crops. Generally the dung is collected and heaped in the open or put into a pit mixed with refuse straw and sweepings and is thus exposed to sun and rain. Decomposition s ts in and valuable and soluble constitutents are last either into the air or through leeching. Nitrogen is lost as ammonia into the air and soluble portions of potash and phosphoric acid, in draingage water. What is left is of little value, Similar losses occur when cattle manure is dumped in a field and left in heaps or spread and not covered over or worked in.

Potash manures supply only potash, phosphatic manures, only phosphoric acid and nitrogenous manures, only nitrogen. The chief merit of cattle manure lies in possessing all these plant-foods.

5. Besides, cattle manure has other merits. It adds a lot of organic matter to the soil. It improves its physical condition. It opens up or loosens a stiff clay. It binds or brings together sand particles and helps in reducing the number of waterings given to a crop. It helps in retention of moisture in a soil. Through its application the ryot puts back into the soil what each crop removes in the form of a number of plant foods. The bacterial action in the soild is very largely promoted by the cattle manure.

For these reasons cattle manure is more important than any other manure.

6. In most places where fuel is not available in adequate quantities or where it is scarce, as for instance in the neighbourhood of townscattle dung is made into cakes and is used as fuel. The ashes obtained from these cowdung cakes are collected and applied as manure, but ashes do not contain nitrogen nor can they supply the decomposed and decomposing vegetable matter which forms the essence of cattle manure. It would be found far cheaper in the long run if fuel is imported even at a higher price and all cowdung made available for manurial purposes alone.

p .t.o.

7. When cattle are penned in the fields, as is the custom in dry weather in some districts, though this is not a very satisfactory method of using their manures, the dung must be spread every morning and the portions where the urine has soaked the previous night and where dung has been spread must be ploughed so that little loss ensues.

8. When animals are stalled the methods of collection and preservation vary. The cattle shed must be constructed properly.

(a) The common type of shed in ryots' holdings is an open fronted shed. In this shed the feeding troughs are placed along the walls and the animals are tied facing the walls to the stakes driven in front of the feeding troughs. The floor on which animals stand in is not impervious. Urine soaks into it, the soild becomes saturated. The urine ferments, the cattle shed becomes insanitary, the air foul and liable to affect the health of animals. This defect can be remedied by making the floor impervious and slope from the feeding troughs. Beaten clay will suffice to make the floor impervious.

The floor of the feeding troughs is usually raised above ground level so that the animals do not bend down too far while eating. They should not be raised too high either.

There must be a drain to convey the luquid manure to a pit outside the shed. The pit should have its bottom and sides made impervious and be preferably provided with a roof. The dung that is daily removed from the shed should be put into this pit, and covered over with a thin layer of earth. The dung should not be stirred and mixed with urine as the proportion of loss of nitrogen then is very much greater than when they are left together in the pit and covered with earth. Periodically, if necessary, the whole mass should be pressed down.

(b) Wherever circumstances permit the floor of the cattle shed can be dug and dry soil spread to a depth of 3-6 inches on top. In this system, the dung is remove ddaily and put into a pit and the urine soaks into the soil. The soil is stirred frequently until it becomes saturated when it is removed to the pit and fresh dry soil is spread again.

(c) Under the third system which is the best method of preserving cattle manure, cattle are kept loose in a box-pit or compartment of simple and inexpensive construction. In this case it is only necessary to have the floor of the compartment about 2-2½ feet below ground level and to provide a roof over the compartment to keep out rain. A sloping entrance will allow cattle to enter easily. The walls and floor may be plastered with clay or built of brick. In any case the walls and floor should be kept non-absorbent and impervious to water. These compartments should be large enough for animals to move about freely or lie down. Feeding troughs are placed on one side, preferably freely or lie down. Feeding troughs are placed on one side, preferably movable ones. Every morning after the animals are taken out, the dung is spread evenly and thinly covered with refuse straw or litter. The urine soaks in and is absorbed by the litter. Fermentation and firmly and thus keeping out air. Sometimes it may be necessary to add water to corners and margins where the stu ff does not get loss. In the course of -3-4 months the whole forms a uniform mass of well-rotted manure. It is then ready to be removed. Now the undecomposed top layer is removed and returned to the bottom of the pit.

This system gives a righer and larger quantity of manure than the systems above described. Too much litter should be avoided, as the manure becomes dry and valuless.

Chopped straw or stalks or short litter should be applied if our aim is a well-mixed manure. The litter used should be of such a nature as to absorb urine effectively. In places where straw is too valuable dry leaves and weeds may be substituted. A suitable size for the a compartment under this system to house a pair of animals is 10 feet square. When proper care is taken, this will yield 20 cart-loads of good manure per year per box of this size. The manure prepared in this way can be spread over a larger area than when made in other ways.

Sd.V.Muttuswami ayyar.

/ true copy /

Development Department.

D.O. 95065 A III/47-1, dated 7-10-1947.

My dear Sivaraman,

You are probably quite aware that a very good source of nitrogenous manure is being wasted in the shape of cattle urine. You are probably aware of the method adopted inSouth Kanara of conserving cattle urine by bedding cattle on leaves, When the leaves are properly soaked with urine, they are taken and used as manure greatly to the benefit of the lands in South Kanara. Unfortunately, this system does not seem to be in vogue at least in any useful measure in any other district in this Province. Could you kindly take steps to popularise the South Kanara method in other districts by instructing your subordinates to do sustained propaganda with demonstrations if necessary? Suitable booklets might also be printed and distributed in the vernacular.

Yours sincerely,

Sd. x x x
7-10-47.

To:

M.S. Sivaraman, Esq.,I.C.S.,
Director of Agriculture.

/ true copy /

AGRICULTURAL DEPARTMENT.

From
M.S. Sivaraman Esq.,I.C.S.
Director of Agriculture,
Chepauk: M a d r a s.

To
The Secretary to Government,
Development Department,
Fort St. George, Madras.

No.L.3.1154/47 dated 19-11-1947.

Sir,

Sub: Article on the methods of preservation of cattle urine - publishing of-

Ref: Your D.O.No.95065 A III/47-1 dated 7-10-1947.

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Preservation of cattle urine has been one of the main items of propaganda of this Department, since its inception. The method of its preservation needs modification with reference to local conditions. A note on the subject (copy enclosed) is being published in the next issue of the Telugu and Tamil editions of the Grow More Food Journals - Padipantalu and Mazhichelvam - as desired.

2. Some leaflets on urine and manure preservation have already been published by the Department. Leaflet No. 24 of the department is enclosed for the information of Government. During 1945-46, 163,112 manure pits were opened or ratified, urine earth or byre system was introduced in 57, 496 and holdings and loose box system in 3,175 holdings.

M. ANANDAN,
for DIRECTOR OF AGRICULTURE.

/ true copy / Forwarded / By order/

Sd. x x x
GAZETTED ASSISTANT.

/ true copy /

Development Department.

TO A.S.

With reference to the D.O. on p.1 above, the Director of Agriculture's report on p. 2 above and the note and leaflet on pp.4-7 below may be perse used. The papers may be recorded for reference

G.O.Ms.No.5604, Development, dated 3rd December 1947.

Abstract:

Manure - Preservation of cattle urine - Papers Recorded.

Sd. x x x
27-11-47

/ true copy /

Office Assistant,
MADRAS RECORD OFFICE.

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